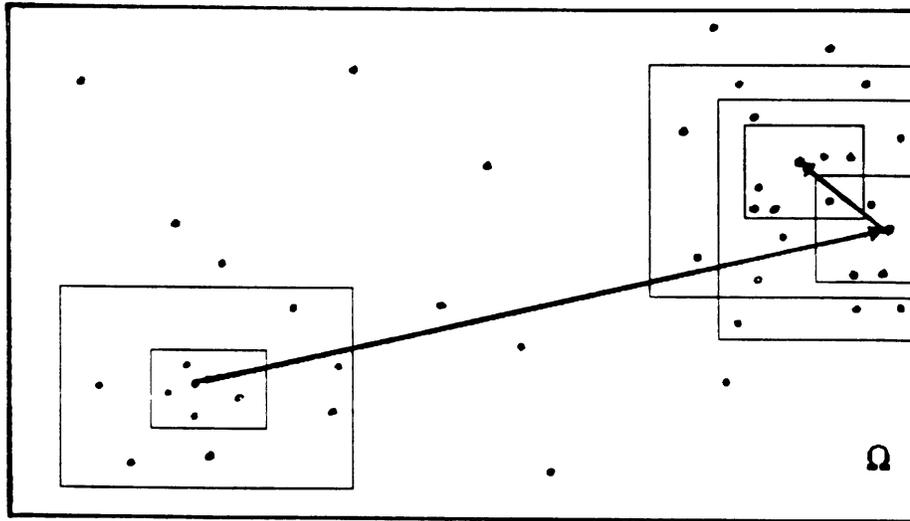


IV.4.2-OPT3-ARS PROGRAM OPT3 ARS CONCEPT REPRESENTATION

Search of Two Parameter Space (Brazil, 1989)

Method



IF1 = number of range levels in each cycle (assume IF1 = 3 for this example)

IF3 = number of trials (parameter sets) in first range level

MAXN = maximum number of trials allowed before optimization is terminated

1. First Cycle - consists of IF1 ranges.
 - A. First Range - covers the entire allowable range of parameters.
 - Randomly searched with IF3 sets of values.
 - The optimum parameter set from this search is saved.
 - B. Second Range - one-third the size of the first range and is centered about the initial parameter values.
 - Randomly searched with IF3/2 sets of values.
 - The optimum parameter set from this search is saved.
 - C. Third Range - one-third the size of the second range and is centered about the initial parameter values.
 - Randomly searched with IF3/3 sets of values.
 - The optimum parameter set from this search is saved.The first cycle is complete.
2. The best of the 3 sets of parameters is determined. If the optimum set for the cycle occurs in the last (smallest) range then the

cycle is successful and the counter = 1, otherwise counter = 0.

3. Successive cycles operate exactly as the first except that during the course of any cycle all ranges (after the first) are centered around the best parameter set from the previous cycle.

The counter is increased by one after each successive cycle. When the counter reaches a user specified value optimization is complete. If the optimum set from a cycle is not in the smallest (last) range, the counter is set to zero. If the cumulative number of trials (from all cycles) exceeds MAXN, the program will stop.

References

Brazil, L.E., 'Multilevel Calibration Strategy for Complex Hydrologic Simulation Models', NOAA Technical Report, NWS 42, Silver Spring, Maryland, 1989.